IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)
)
   Tai, et al.   ) Examiner: Not Yet Assigned
)
Application No.: Not Yet Assigned) Art Unit: Not Yet Assigned
)
Filed: Concurrently Herewith   )
)
For: METHOD AND APPARATUS FOR)
   EXTENDING POINT- TO- POINT/)
   ASYNCHRONOUS TRANSFER MODE)
   SERVICES TO CLIENT COMPUTER)
   SYSTEMS   )
)
)
This is a Divisional of:)
Application No.: 09/ 182,585   ) Examiner: Elallam, A.
)
Filed: October 28, 1998   ) Art Unit: 2662

PRELIMINARY AMENDMENT

Box Divisional Patent Application
Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination of the above-captioned case, the Applicants

respectfully request the Examiner to enter the following amendment and to

consider the following remark.

Amendments To Specification--Clean Version

On Page 1, please add the following paragraph after the title:

This is a division of Application No. 09/182,585, filed October 28, 1998.

On Page 1, please replace the paragraph beginning on line 21 with the following paragraph:

Current ADSL modems that support ATM network technology require sufficient processing and memory resources in order to perform the necessary ATM signaling procedures and segmentation and reassembly (SAR) functionality. In addition, in order to support a point-to-point protocol for connecting a client system to the Internet, ADSL modems require sufficient processing and memory resources to run a Layer Two Tunneling Protocol (L2TP) over a User Datagram Protocol/Internet Protocol. The L2TP enables Internet service providers to operate virtual private networks (VPNs). Figure 1 illustrates the modules that a conversational ADSL modem 100 supports in providing PPP/ATM services to a client computer system 160. The ADSL modem 100 supports a UDP/IP stack 110 and a L2TP stack 120 on a first side that is connected to the client computer system 160 via modem-client connection 150. The ADSL modem 100 also supports an ATM protocol stack 130 on a second side connected to the ADSL physical interface 140. The ATM protocol stack 130 includes an ATM layer 131, segmentation and re-assembly layer (SAR) 132, ATM adaptation layer (AAL) 133, and a signaling (SIG) layer 134. Data received from the ADSL physical interface 140 us processed by the ATM protocol stack

130 on the ADSL modem 100 to retrieve raw data from the payload of an ATM cell. Similarly, data received from the client computer system 160 to be transmitted on the ADSL physical interface 140 is processed by the ATM protocol stack 130 on the ADSL modem 100 to appropriately format the data into ATM cells.

On Page 5, please replace the paragraph beginning on line 24 with the following paragraph:

According to an embodiment of the present invention, the broadband modem 230 is a peripheral, whereby it operates as a communications peripheral rather than a networking node to the second computer system 220. The broadband modem 230 operates as an interface between the first computer system 210 and the second computer system 220 without performing ATM signaling procedures. The broadband modem 230 forwards ATM cells received from the first computer system 210 to the second computer system 220 without performing reassembly procedures to retrieve data from the ATM cells' payload. Similarly, the broadband modem 230 transmits the ATM cells received from the second computer system 220 to the first computer system 210 without performing segmentation procedures to construct the ATM cell.

On Page 11, please replace the paragraph beginning on line 19 with the following paragraph:

A data transfer unit 450 is coupled to the power management unit 440.
For data formatted as ATM cells, the ATM signaling procedures are performed
on the computer system 220. The data transfer unit 450 transfers ATM cells to
and from the broadband modem. For data formatted with cell header template
and concatenated cell payloads, duplicate cell headers are removed with the rest
of the operation remaining the same as described above.

**On Page 14, please replace the paragraph beginning on line 18 with
the following paragraph:**

Figure 7 illustrates the modules that the broadband modem 230 and
computer system 220 support to provide PPP/ATM service according to an
embodiment of the present invention. Unlike the conventional broadband
modem 100 illustrated in Figure 1, the broadband modem 230 of the present
invention operates as a communications peripheral rather than a networking
node. The broadband modem 230 operates as an interface between the first
computer system 210 and the second computer system 220 without performing
ATM signaling procedures and SAR functionalities. The broadband modem 230
forwards ATM cells received from the computer system 210 to the transmission
medium 250 without performing segmentation procedures to construct the ATM
cell. Similarly, the broadband modem 230 transmits the ATM cells received from
the transmission medium 250 to the computer system 210 without performing
assembly procedures to receive data from the ATM cells' payload. An ATM unit
710 on the broadband modem 230 also generates and verifies the header control

(HEC) field in the ATM cell for upstream and downstream traffic. According to an embodiment of the present invention, the traditional ATM signaling procedures once performed by the signaling stack 130 (shown in Figure 1) on conventional broadband modems 100 are performed by an ATM unit 500 on the computer system 220. Migrating the ATM signaling procedures onto the computer system allows PPP/ATM services to be extended to client computer systems without requiring L2TP and UDP/IP to be run on broadband modems. This reduces the hardware required for broadband modems and reduces connection and installation procedures necessary for extending PPP/ATM services to client computer systems. It should be appreciated that when the data format negotiated between the broadband modem 230 and the computer system 220 is of the AAL5 format, the SAR unit 520 would be implemented on the broadband modem 230 instead of the computer system 220.

On Page 16, please replace the paragraph beginning on line 1 with the following paragraph:

Figure 9 is a flow chart that illustrates a method for managing a broadband modem according to an embodiment of the present invention. At step 901, a broadband modem that is connected to a computer system is discovered. According to an embodiment of the present invention, discovery may be achieved by transmitting a discovery signal over a connection and recording a media access control (MAC) address corresponding to the broadband modem

that transmits a discovery acknowledge signal in response to the discovery

signal.

In The Claims

Presented below are the amended claims in a clean-unmarked format.

12. A method for managing a broadband modem, comprising:

transmitting a discovery signal over a connection;

entering a connect state in response to receiving a discovery acknowledge signal;

recording a media access control (MAC) address corresponding to the broadband modem that transmitted the discovery acknowledge signal in response to the discovery signal; and

transmitting a terminate message to other broadband modems connected to the connection.

13. The method of Claim 12, further comprising specifying data formats that may be supported in the discovery signal.

14. The method of Claim 12, further comprising recording a data format selected by the broadband modem in the discovery acknowledge signal.

15. The method of Claim 12, further comprising:

sending a poll message to the broadband; and

entering a disconnect state if a poll acknowledge message is not received in response to the poll message within a predefined period of time.

16. The method of Claim 12, further comprising transmitting a sleep message to the broadband modem indicating that its binding client system is about to enter into a sleep state.

17. (Amended) A method for managing a broadband modem, comprising:

transmitting a discovery acknowledge signal over a transmission medium

in response to receiving a discovery signal from a client system;

and

entering a connect state.

18. The method of Claim 17, further comprising specifying a data format that may be supported by the broadband modem among data formats specified in the discovery signal.

19. The method of Claim 17, further comprising:

transmitting a poll acknowledge message to the client computer system in

response to receiving a poll message; and

entering a disconnect state if the poll message is not received within a

predetermined period of time.

20. The method of Claim 17, further comprising forwarding asynchronous transfer mode (ATM) cells between the client system and a asymmetric digital subscriber line (ADSL).

21.	The method of Claim 20 further comprising generating and verifying a header error control (HEC) field in the ATM cell.

22.	The method of Claim 17, further comprising entering into a sleep state and disabling an activity timer upon receiving a sleep message from the client system.

23.	The method of Claim 22, further comprising:
	entering into the connect state upon receiving a wake-up event from a
		second client system; and
	entering into a disconnect state if the poll message is not received from
		the client system within the predetermined period of time.

24.	(Amended) A computer-readable medium having stored thereon a sequence of instructions, the sequence of instructions including instructions which, when executed by a processor, causes the processor to perform the steps of:
	transmitting a discovery signal over a connection;
	entering a connect state in response to receiving a discovery acknowledge
		signal;
	recording a media access control (MAC) address corresponding to the
		broadband modem that transmitted the discovery acknowledge
		signal in response to the discovery signal; and
	transmitting a terminate message to other broadband modems connected
		to the connection.

25.   The computer-readable medium of Claim 24, further comprising instructions which, when executed by the processor, causes the processor to perform the step of specifying data formats that may be supported in the discovery signal.

26.   The computer-readable medium of Claim 24, further comprising instructions which, when executed by the processor, causes the processor to perform the step of recording a data format selected by the broadband modem in the discovery acknowledge signal.

27.   The computer-readable medium of Claim 24, further comprising instructions which, when executed by the processor, causes the processor to perform the steps of:

sending a poll message to the broadband modem; and

entering a disconnect state if a poll acknowledge message is not received in response to the poll message within a predefined period of time.

Please add the following new claims:

- - 30. (New) A method for establishing an asynchronous transfer mode (ATM) signal for transmitting an ATM cell from a first computer system to a second computer system comprising:

transmitting the ATM cell from a first computer system to a given one of a plurality of broadband modems, the plurality of broadband modems configured to operate as peripherals; and

transmitting a discovery signal from a second computer system to the plurality of broadband modems;

the given one of the plurality of broadband modems transmitting a discovery acknowledge signal to the second computer system in response to the discovery signal to establish a binding between the second computer system and the given one of the plurality of broadband modems; and

the second computer system entering into a connect state with the given one of the plurality of broadband modems to accept the ATM cell from the given broadband modem.

31.   (New) The method of Claim 30, further comprising specifying data formats that may be supported in the discovery signal.

32.   (New) A computer-readable medium having stored thereon a sequence of

instructions, the sequence of instructions including instructions which,

when executed by a processor, causes the processor to perform:

transmitting a discovery signal over a connection;

transmitting the ATM cell from a first computer system to a given one of a

plurality of broadband modems, the plurality of broadband modems

configured to operate as peripherals; and

transmitting a discovery signal from a second computer system to the

plurality of broadband modems;

the given one of the plurality of broadband modems transmitting a

discovery acknowledge signal to the second computer system in

response to the discovery signal to establish a binding between the

second computer system and the given one of the plurality of

broadband modems; and

the second computer system entering into a connect state with the given

one of the plurality of broadband modems to accept the ATM cell

from the given broadband modem. --

Remark

Applicants respectfully request consideration of this application as amended. Claims 1-11, and 28-29 have been cancelled, claims 17 and 24 have been amended, and claims 30-32 have been added. Therefore, claims 12-27, and claims 30-32 are present for examination.

Conclusion

Applicants respectfully submit that the rejections have been overcome by the amendment and remark, and that the claims as amended are now in condition for allowance. Accordingly, Applicants respectfully request the rejections be withdrawn and the claims as amended be allowed.

Invitation for a Telephone Interview

The Examiner is requested to call the undersigned at (303) 740-1980 if there remains any issue with allowance of the case.

Request for an Extension of Time

The Applicants respectfully petition for an extension of time to respond to the outstanding Office Action pursuant to 37 C.F.R. § 1.136(a) should one be necessary. Please charge our Deposit Account No. 02-2666 to cover the necessary fee under 37 C.F.R. § 1.17(a) for such an extension.

Charge our Deposit Account

Please charge any shortage to our Deposit Account No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Date: 8/27/01

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Version with Markings to Show Changes Made

Insertions are underlined, deletions bracketed.

In the Specification:

On Page 1, please replace the paragraph beginning on line 21 with the following paragraph:

Current ADSL modems that support ATM network technology require sufficient processing and memory resources in order to perform the necessary ATM signaling procedures and segmentation and reassembly (SAR) functionality. In addition, in order to support a point-to-point protocol for connecting a client system to the Internet, ADSL modems require sufficient processing and memory resources to run a Layer Two Tunneling Protocol (L2TP) over a User Datagram Protocol/Internet Protocol. The L2TP enables Internet service providers to operate virtual private networks (VPNs). Figure 1 illustrates the modules that a conversational ADSL modem 100 supports in providing PPP/ATM services to a client computer system 160. The ADSL modem 100 supports [an] a UDP/IP stack 110 and a L2TP stack 120 on a first side that is connected to the client computer system 160 via modem-client connection 150. The ADSL modem 100 also supports an ATM protocol stack 130 on a second side connected to the ADSL physical interface 140. The ATM protocol stack 130 includes an ATM layer 131, segmentation and re-assembly layer (SAR) 132, ATM adaptation layer (AAL) 133, and a signaling (SIG) layer 134. Data received from the ADSL physical interface 140 us processed by the ATM protocol stack

130 on the ADSL modem 100 to retrieve raw data from the payload of an ATM cell. Similarly, data received from the client computer system 160 to be transmitted on the ADSL physical interface 140 is processed by the ATM protocol stack 130 on the ADSL modem 100 to appropriately format the data into ATM cells.

On Page 5, please replace the paragraph beginning on line 24 with the following paragraph:

[According to an embodiment of the present invention, the broadband modem 230 operates as a communications peripheral rather than a networking node to the second computer system 220.] According to an embodiment of the present invention, the broadband modem 230 is a peripheral, whereby it operates as a communications peripheral rather than a networking node to the second computer system 220. The broadband modem 230 operates as an interface between the first computer system 210 and the second computer system 220 without performing ATM signaling procedures. The broadband modem 230 forwards ATM cells received from the first computer system 210 to the second computer system 220 without performing reassembly procedures to retrieve data from the ATM cells' payload. Similarly, the broadband modem 230 transmits the ATM cells received from the second computer system 220 to the first computer system 210 without performing segmentation procedures to construct the ATM cell.

On Page 11, please replace the paragraph beginning on line 19 with the following paragraph:

A data transfer unit 450 is coupled to the power management unit 440. For data formatted as ATM cells, the ATM signaling procedures are performed on the computer system 220. The data transfer unit 450 transfers ATM cells to and from the broadband modem. For data formatted with cell header template and concatenated cell payloads, duplicate cell headers are removed with the rest of the operation [remains] remaining the same as described above.

On Page 14, please replace the paragraph beginning on line 18 with the following paragraph:

Figure 7 illustrates the modules that the broadband modem 230 and computer system 220 support to provide PPP/ATM service according to an embodiment of the present invention. Unlike the conventional broadband modem 100 illustrated in Figure 1, the broadband modem 230 of the present invention operates as a communications peripheral rather than a networking node. The broadband modem 230 operates as an interface between the first computer system 210 and the second computer system 220 without performing ATM signaling procedures and SAR functionalities. The broadband modem 230 forwards ATM cells received from the computer system 210 to the transmission medium 250 without performing segmentation procedures to construct the ATM cell. Similarly, the broadband modem 230 transmits the ATM cells received from the transmission medium 250 to the computer system 210 without performing

assembly procedures to receive data from the ATM cells' payload. An ATM unit 710 on the broadband modem 230 also generates and verifies the header control (HEC) field in the ATM cell for upstream and downstream traffic. According to an embodiment of the present invention, the traditional ATM signaling procedures once performed by the signaling stack 130 (shown in Figure 1) on conventional broadband modems 100 are performed by an ATM unit 500 on the computer system 220. Migrating the ATM signaling procedures onto the computer system allows PPP/ATM services to be extended to client computer systems without requiring L2TP and UDP/IP to be run on broadband modems. This reduces the hardware required for broadband modems and reduces connection and installation procedures necessary for extending PPP/ATM services to client computer systems. It should be appreciated that when the data format negotiated between the broadband modem 230 and the computer system 220 is of the AAL5 format, [a] the SAR unit 520 would be implemented on the broadband modem 230 instead of the computer system 220.

On Page 16, please replace the paragraph beginning on line 1 with the following paragraph:

Figure 9 is a flow chart that illustrates a method for managing a broadband modem according to an embodiment of the present invention. At step 901, a broadband modem that is connected to a computer system is discovered. According to an embodiment of the present invention, [discover] discovery may be achieved by transmitting a discovery signal over a connection and recording a

media access control (MAC) address corresponding to the broadband modem that transmits a discovery acknowledge signal in response to the discovery signal.

1. -11.   (Cancelled)

28. –29.   (Cancelled)

17.   (Amended) A method for managing a broadband modem, comprising:

transmitting a discovery acknowledge signal over a transmission medium

in response to receiving a discovery signal from a client system;

and

entering a connect state.

24.   (Amended) A computer-readable medium having stored thereon a

sequence of instructions, the sequence of instructions including

instructions which, when executed by a processor, causes the processor

to perform the steps of:

transmitting a discovery signal over a connection;

entering a connect state in response to receiving a discovery acknowledge

signal;

recording a media access control (MAC) address corresponding to the

broadband modem that transmitted the discovery acknowledge

signal in response to the discovery signal; and

transmitting a terminate message to other broadband modems connected

to the connection.

30. - 32.   (New)